

TRIPOLI EAST VEGETATION MANAGEMENT PROJECT

APPENDIX E - VEGETATION REPORT

Location:

The Tripoli East Project Area lies within MA 2.1 and 3.1 lands in compartments 112,113,114,116 and 117 and within the Eastman Brook sub-watershed.

History:

Prior to settlement, the vegetation in the project area was a climax forest of northern hardwoods or spruce-fir type. There is little evidence that the vegetation was influenced by Native Americans. The most common species present would have been beech, sugar maple, yellow birch, red spruce, and hemlock. At times, natural disturbances like wind throw, fire, or mortality due to insect and disease attack, reduced or removed tree cover and exposed soil. This exposed soil provided the opportunity for trees less tolerant of shade to develop and to temporarily occupy the site. These included species such as red maple, paper birch, balsam fir, white pine, red oak, and aspen. Wind events were more common in the area and continue to affect the forest today.

In the late 1700s, New England settlers began moving into the lower portion of the Eastman Brook drainage from the Thorton Gore area. Town roads and farmsteads were established above the Brook channel and below the mountainsides. Old foundations and stone walls can be found wherever there was tillable soil. Later, a small community with a hotel, church and mills was established near the junction of Eastman and Talford Brooks. Trees were cut and harvested to produce dwellings, clear land for agriculture, and sold as income to local communities. For a short time into the 1800s these farms continued to develop, clearing and occupying more forested land. Towards the latter half of the 1800s these farms would no longer support their inhabitants, and they were slowly abandoned. As the land reverted back to forest, the upper slopes were made accessible to logging by new railroad technology. The higher slopes of the project area were regenerated following this logging, but at different intervals. Although only certain species and sizes were utilized, all trees were cut to facilitate the removal of the most desirable products.

The resulting forest developed with a range of ages and some variation in species due to the type of treatment they originally received. During the 1930s a Civilian Conservation Corp camp was established near the junction of the Tripoli road and the Hix Mountain Road. Among the many accomplishments of the CCC work force was the improvement of the Tripoli road and timber stand improvement ("liberation") activities in the project area. There were several small thinning sales in the older stands in the 1930s and 40s to support the depression economy and then the WWII effort. In the 1950s and 1960s, a more extensive area was thinned to improve stand quality and provide growing space for the best trees. Beech scale complex invaded the area through the 1940s and 1950s. Many older, larger (residuals from the original stands) beech have died. Others have slowly been affected with lesions and stem rot. These trees often break off due to mechanical failure. Defoliations associated with Forest Tent Caterpillar and the Saddle Prominent have also resulted in additional mortality or decline.

In the 1970s and 80s, many low-quality or mature stands were regenerated successfully, and, to improve stand quality, additional thinning was applied to others. Late in this period, the first uneven-aged treatments were applied. There was no management activity in the 1990s. Recently, an inventory of the resources in the area has resulted in the current treatment proposals.

Base Resources:

The geology, soils, and vegetation in the project area are typical of other sites in the White Mountains National Forest that have similar elevation and exposure. Geological history, including glaciations, weathering, alluvial deposition, and erosion, have worked together to form several different soil types. These, together with past management influences and current vegetation composition, combine to define the ecological characteristics of Ecological Land Types (ELTs).

Within the Land Type Associations (LTA), of Mountain Slopes and Valley Bottoms of the project area, there are 3 main ELTs. There are relatively equal proportions of hardwood, lower slopes on deep ablational tills, softwood-hardwood lower slopes with thick compacted, sediments, and hardwood lower slopes with deep permeable sediments. Most have moderate erosion and compaction risk. The lower slopes with thick compacted sediments have a high risk of erosion and compaction. The ablational till and permeable sediments are best suited to northern hardwood forest types. The compacted sediments are more suited to softwood or mixed wood types. There are small deviations within each ELT area that must be handled as exceptions.

Forest Vegetation:

The tree compositions and stand structures in the project area are typical of other forest types in the region. Species within the northern hardwood group are most common. The relative amount of forest types and age classes are shown in the table below.

Forest Cover by Type and Age Class[‡]

Forest Type	Age Class				Total Acre	Total %
	Regenerating	Immature	Mature	Over-Mature		
Hemlock	0	0	0	8 Ac / 0%	8 Ac	0%
Softwoods	0	32 Ac / 1	65 Ac / 2%	9 / 0%	106 Ac	3%
Hardwood	0	2320 Ac / 70	397 Ac / 12%	89 Ac / 3%	2806 Ac	84%
Paper Birch/Aspen	0	171 Ac / 5	60 Ac / 2%	163 Ac / 5%	394 Ac	12%
Open	19 Ac / 1%					1%
All	19 Ac / 1%	2523 Ac / 76%	522 Ac / 16%	269 Ac / 8%	3332 Ac	100%

[‡] Age-class groups are based on silvicultural guides and are different from wildlife habitat groups used in HMU analysis.

To provide desirable habitat and vegetative species diversity, it would be desirable to have more regenerating acreage and greater amounts of hemlock, other softwoods, pine/oak, paper birch, and aspen. Regeneration treatments will increase the amount of paper birch and aspen type as well as the portions of those species in regenerating northern hardwood types. The shortage of softwood trees within the current stocking make it difficult to increase the amounts of those species through management.

The immature category is made up mostly of 80 to 110-year old northern hardwoods that are nearing maturity. A smaller portion, about 20% is 12 to 30 year old stands that were regenerated in the 1970s and 1980s. While these usually meet the classifications standards of the northern hardwood type, they have greater diversity in species composition than their parent stands.

The older immature, mature and, over-mature stands have health issues associated with age. Much of the older paper birch has fine twig or branch dieback. This occurs during years of adverse growing conditions. Eventually, this will provide entry points for pathogens, stem defects will increase, and

mechanical strength will weaken. Top or stem breakage will become common. Beech scale complex is present and affects individual trees differently due to variance in genetic resistance. Many trees have numerous old lesions and associated interior defect. Often these trees are in groups due to genetic similarity. Affected trees often suffer mechanical failure due to internal defects. There is evidence of sugar maple borer but it is not a significant problem at this time.

There are individual scattered wild ginseng and squirrel corn plants and butternut trees, within portions of the project area, which are R9-listed sensitive species. Early settlers most likely introduced the butternut trees here. They are all located outside of proposed harvest units near old foundations. They all have cankers, indicating that they are infected by the Butternut Canker. It is unlikely that they will survive for more than 5 to 10 years. There could be the chance that one or some of them could be resistant or partially resistant. For that reason they would be retained and monitored (see the Tripoli East BE/BA as amended and Supplemental Information Reports in the project file).

After the Forest Plan was completed individual stands were analyzed according to other resource values, ELT characteristics and species composition. Each stand was assigned to either even- or uneven-aged management. Each of these strategies provides variation in management opportunities. At the same time, there is often variation in stand structure or species composition. Where stands are primarily stocked with shade-tolerant species like beech, sugar maple, or hemlock, single tree selection is often prescribed for an uneven-aged strategy. The stands in the project area that met this criterion also have exceptions within them. These are usually pockets of paper birch or aspen that are in decline. In these cases, group selection is applied, but only to the area where it is needed. When stands are in the even-aged category, they may contain exceptions that would be valuable to retain into the next generation. In these cases the area would be identified and left out as a leave patch.

The vegetation in New England has endured a substantial drought in the 2001 growing season. Often in the past a drought of this magnitude has resulted in accelerated mortality in trees that are already under stress. The Paper Birch in the project area that exhibits die back is a good example. If the drought were to be followed by another drought or an insect defoliation even greater mortality could be expected. In stands where treatment is currently proposed it may be prudent to monitor tree health incase additional trees decline and could be salvaged concurrently with the planned harvest.

ANALYSIS OF POTENTIAL EFFECTS OF THE PROPOSED TRIPOLI EAST VEGETATION MANAGEMENT PROJECT ON STATE-LISTED TESSC & OTHER PLANT SPECIES OF CONCERN

INTRODUCTION: This analysis documents the potential effects of the proposed Tripoli East Vegetation Management Project on State-listed Threatened, Endangered, Species of Special Concern (TESSC) and other plants of concern for the Tripoli East Project Area. District Biologist Weloth prepared this analysis in accordance with direction and format provided in Forest Service Manual (FSM) 2672.42.

ANALYSIS AREA (Herein after referred to as the Project Area): See the Vegetation Resource Section (HMU 416 and 417 Analysis) and Vegetation Section of the EA for a complete description of the Project Area in terms of the location and the existing condition.

PURPOSE AND NEED: See the Purpose and Need Section of the Tripoli East EA 2.0.

PROPOSED ACTION AND ALTERNATIVES: See the Alternatives Section of the Tripoli East EA 2.0.

I. PRE-FIELD REVIEW OF EXISTING INFORMATION: In September 1998, the FS scoped the US Fish and Wildlife Service, the NH Fish and Game Department, the NH Audubon Society, and the NH

Natural Heritage Inventory (NHNHI) regarding the potential status of occurrence and any concerns for TESSC plant species within the proposed Tripoli East Vegetation Management Project Area. NHNHI responded in writing to FS public scoping indicating no known verified documented occurrences of TESSC plants within the Project Area. Although they are also State-listed, the small whorled pogonia (*Isotria medeoloides*) (recently federally de-listed), and butternut (*Juglans cinerea*) are Federally-listed and were addressed in the Tripoli East Vegetation Management Project BE/BA (see project file).

Literature, Database, Species List Reviews, & Personal Communications: Most range and habitat information for plant species is taken from Storks and crow (1979), Gleason and Cronquist (1991), Royal Botanical Gardens (2000), Plants for a future (2000), and Sperduto (1998). Other sources used to determine species range and habitat requirements included topographic, ELT, soil, GIS maps & aerial photos and reviews of literature and recovery plans and internal and external database checks and personal communications with professional biologists and botanists (see Literature Cited and/or Reviewed Section of the Tripoli East BE/BA).

II. FIELD RECONNAISSANCE:

1998 - 2002 Forest Service (FS) Interdisciplinary-Team (IDT) Field Reviews: FS ID-Team, conducted site-specific field reviews of the proposed Project Area at various times of the year including periods of flowering and leaf off. FS site-specific botanical surveys found no occurrences of TESSC plants within portions of the hardwood, softwood, and riparian habitat of the Project Area within the Project Area. Individual scattered ginseng and squirrel corn plants and butternut trees (which are R9SS) were found in portions of the Project Area. These species are addressed in the Tripoli East BE/BA as amended.

1998 NH Natural Heritage Inventory (NHNHI) TEPS Plant Surveys and USFWS GIS Maps: NHNHI database check revealed no known occurrences of rare plants (scoping letter response).

1991, 1994 FS Stream/Riparian Surveys & FS 2000 Culvert & Electrofishing Surveys: FS Biological Technicians conducted Hankin & Reeves (1988) basin-wide stream/riparian surveys of Eastman, Talford, and Mack Brooks located in, adjacent to, and downstream of the Project Area respectively. Technicians documented no occurrence of TESSC aquatic plants during these aquatic ecosystem surveys (unpublished data). Also, no TESSC plants were found in the riparian areas during FS 2000 culvert and electrofishing surveys.

II. ANALYSIS OF PROBABILITY OF OCCURRENCE OF TESSC PLANT SPECIES and HABITAT:

In addition to the federally listed TEPS species addressed in the BE/BA, the NHNHI maintains a tracking list of over 350 plant species, including species listed as threatened or endangered under the New Hampshire Native Plant Protection Act of 1987 (NHNHI 2002). During ongoing coordination, the Forest Service contacted NHNHI and requested a specific list of species with potential to occur within the White Mountain Ecological Subsection. As a result, NHNHI compiled a list of 113 species known from the White Mountain Ecological Subsection. Biologist Weloth reviewed and analyzed this NH State list of 113 species: 2 are federally listed and 27 are on the Forest Service Eastern Region 9 Sensitive Species list and they were addressed in the BE/BA and summarized in the EA. An additional 17 species are not state-listed threatened or endangered and were not likely to occur thus were not analyzed in detail. A probability of occurrence analysis was completed for the remaining 67 species shown in Appendix G. This analysis followed the same procedure as outlined in BE/BA for the federally listed TEPS species: Based on the habitat requirements for each species and the habitats present in the Tripoli East Project Area, 40 species were determined to have little or no probability of occurrence and were not further analyzed. Most of the species that were not further analyzed are

associated with alpine or subalpine habitats, neither of which occurs in the Tripoli East Project Area, as previously noted in the Federal-listed plant species section. The remaining 27 species were determined to have a low or very low probability of occurrence in the Tripoli East Project Area and are addressed in the effects section under each alternative. Site-specific field surveys located no Federal or state threatened or endangered species on the NHNHI Plant Tracking List (FS Field Reviews and Sperduto 1998).

The State lists 11 Species of Special Concern plants that may be subject to commercial exploitation or over-collecting (NHNHI 2002). The NHNHI does not actively track these special concern plant species, nor does it provide or solicit location data for these plants. These species were also included in the probability of occurrence analysis (Appendix G) and 7 were determined to have some probability of occurrence in the Project Area based on suitable habitat present and the assumption it could be occupied. The NHNHI documented occurrence of R9-listed sensitive butternut (*Juglans cinerea*) within the Tripoli East Project Area and no species of special concern plants were encountered during site-specific field surveys (FS site-specific field reviews and Sperduto 1998).

During the ongoing WMNF Forest Plan Revision process, several plants that are not listed on the current Eastern Region 9 Sensitive Species list (USDA-FS 2000) were identified as having a potential viability concern on the White Mountain National Forest. Some of these species having a viability concern were already R9SS and addressed the in the BE/BA process. The remaining plants are shown in a table in EA Appendix G2. The potential direct, indirect, and cumulative effects described in the EA Vegetation Section and in this Appendix E Vegetation Report would also apply to the species of concern listed in Appendix G2.

Weloth used local knowledge of the area already in hand regarding habitat suitability and site-specific and local surveys. No verified documented sightings of State-listed TESSC species were found during internal and external database or field searches, except for individual scattered butternut, ginseng, squirrel corn and wild ginger. The Project Area contains northern hardwood, paper birch, spruce/fir, and mixed hardwood/softwood forest types. These habitats could provide potential suitable habitat for some TESSC and other species of concern. If suitable habitat was present within the proposed Project Area for species **documented or suspected** as occurring on the WMNF, subsequent analysis of potential effects was based on the **assumption that the suitable habitat present could be occupied by these State-listed and other species of concern.**

This analysis documents the potential effects of the alternatives on the State-listed TESSC and other species of concern having a **very low** probability of occurrence within the Project Area (**Table 1 and Appendix G1&G2**). Because all of the State-listed endangered species had Federal status as well, they were addressed in the Federal BE/BA (in the Project File).

Table 1. TESSC Plants Having A Very Low Probability Of Occurrence (see Appendix G of the EA).

Ciliated aster	Pale early violet	Purple crowberry	Millet-grass
Bosc's pigweed	Kidney-leaved violet	Meadow horsetail	Rock sandwort
Squaw-root	Large yellow lady's-slipper	Walking-fern spleenwort	Flowering dogwood
Canadian germander	Small yellow lady's-slipper	Large-spored quillwort	Jack pine
Hound's tongue	Pink lady's slipper	Green adder's-mouth	Hidden sedge
Dutchman's breeches	White-fringed orchid	Trailing arbutus	Many leaved bulrush
Alpine speedwell	Large purple-fringed orchid		

III. ANALYSIS OF POTENTIAL EFFECTS OF THE NO ACTION & ALTERNATIVES ON:

Direct and Indirect Effects: Although there are no documented occurrences of the State-listed plants determined as having a low probability of occurrence in the Project Area based on marginal amounts of suitable habitat present (**Table 1 and Appendix G1 & G2**), the potential direct effects to listed plants include trampling and/or soil compaction by machinery during summer or fall harvest operations. However, designated skid trails would minimize overall understory vegetation and soil disturbances during summer or fall harvest operations, and the majority of the stands are proposed for winter mitigation season of harvest when snow and frozen ground conditions would minimize potential effects to understory vegetation. Also, some of the State-listed plants having low probability of occurrence within the Project Area favor wet areas that are excluded from harvest units and skid trail layout. Indirect effects of the Proposed Action and action alternatives include increased sunlight reaching the forest floor from open canopy conditions, which could be beneficial to shade intolerant plants that favor open woods and clearings, but negative benefit to the shade tolerant species that favor deep shade.

IV. EFFECTS DETERMINATION AND RATIONALE: Since there are no documented occurrences and S&G would minimize potential effects, the Proposed Action and all alternatives **may impact individuals, but would not likely contribute to a trend towards listing or cause a loss of viability to the population or species** of State-listed TESSC or other plants of concern having low probability of occurrence shown in Table 1 and EA Appendix G1 and 2:

Table 1. TESSC Plants Having A Very Low Probability Of Occurrence (see Appendix G in EA).

Ciliated aster	Pale early violet	Purple crowberry	Millet-grass
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Canadian germander	Small yellow lady's-slipper	Large-spored quillwort	Jack pine
Hound's tongue	Pink lady's slipper	Green adder's-mouth	Hidden sedge
Dutchman's breeches	White-fringed orchid	Trailing arbutus	Many leaved bulrush
Alpine speedwell	Large purple-fringed orchid		

I. SUMMARY OF STANDARDS AND GUIDELINES (S&Gs) AND AVOIDANCE MEASURES:

The following S&Gs and avoidance measures were considered for the Proposed Action and Action Alternatives to ensure avoidance and protection of TESSC species and/or their potential habitat within the proposed Project Area:

- 1.) Winter harvest when and where feasible.
- 2.) Use designated skid trails and landings.
- 3.) Use native vegetation and straw (if available) during revegetation practices.

Compiled by C. Weloth and S. Wingate